

Subject Experts View Points from World Antimicrobial Awareness Week 2022 to Combat Antimicrobial Resistance in India

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Abstract

Background and Aim: Antimicrobial resistance (AMR) is a global health problem that can lead to longer hospital stays, higher medical costs and increased mortality. The aim of this study was to document the challenges and viewpoints of multidisciplinary subject experts participated in the World Antimicrobial Awareness Week (WAAW) 2022 program to combat AMR in India.

Material and Methods: This was an observational study conducted during the celebrations of WAAW 2022. Subject experts from departments of microbiology, pharmacology, community medicine, general medicine and obstetrics and gynecology were invited to deliver talks on the different aspects of AMR. Questions asked by the delegates to the subject experts during the sessions and the responses given by the subject experts were documented. The data obtained was arranged in the tabular form as per the objectives of the study.

Results: All the subject experts emphasized the urgent need to reduce the incidence of AMR. Subject expert from microbiology reiterated the importance of institutional antimicrobial stewardship program with the aim of restricting the use of broad-spectrum antibiotics only to the critically ill patients. Regulations framed to dispense antimicrobials under schedule H1 must be strictly followed according to the subject expert from pharmacology. An urgent need to increase the awareness on rational use of antimicrobials to all the stakeholders involved in the health care was opined by the subject expert from community medicine. Subject expert from general medicine emphasized on timely deescalating the dose and duration of antimicrobials. Maintaining proper aseptic measures in the operating room is key to reduce surgical site infections (SSIs) according to the subject expert from obstetrics and gynecology.

Conclusion: Strict surveillance from the drug regulatory authorities on antimicrobial dispensing combined with effective implementation of antimicrobial stewardship at every health care institution will only play a key role in bringing down the AMR burden in the country.

Keywords: Antimicrobial resistance, Public awareness, Empirical antimicrobials, Surgical site infections

Introduction

Antimicrobial resistance (AMR) is a global

problem posing challenges to health care professionals in treating common infections¹. It occurs when bacteria, viruses, fungi and parasites

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undergo changes in their genetic makeup and no longer respond to previously effective antimicrobials making common infections harder to treat. AMR increase the risk of disease spread, prolongs duration of illness and increased mortality. AMR also increases the health care costs as well as the economic burden on families and societies.

The main causes of AMR recognized by World Health Organization (WHO) include the misuse and overuse of antimicrobials in agriculture, veterinary, and human medicine due to lack of awareness and knowledge; lack of access to clean water, sanitation and hygiene (WASH); poor infection and disease prevention control measures; poor access to quality, affordable medicines, vaccines and diagnostics; and leniency in the enforcement of government regulations².

In recognition of this growing problem, WHO has adopted a global action plan in the year 2015 aiming to ensure prevention and treatment of infectious diseases with safe and effective medicines across multiple sectors, especially human health, animal health and agriculture. Part of the plan is to celebrate World Antimicrobial Awareness Week (WAAW) every year from 18 to 24 November to increase awareness of antimicrobial resistance worldwide and to encourage best practices among the general public, health workers and policy makers to avoid the further emergence and spread of drug-resistant infections³.

The Indian Council of Medical Research (ICMR), New Delhi, initiated the Antimicrobial Resistance Surveillance & Research Network (AMRSN) in 2013 to collect nationally representative data on trends and patterns of AMR to the commonly used antibiotics in pathogens of public health importance⁴. The data emanating from this network has been used to develop evidence based treatment guidelines for treatment of common syndromes in India. Additionally, the Central Drugs Standard Control Organization (CDSCO) amended the Drugs and Cosmetics Rules in 2013 to include antimicrobials of importance under schedule H1 which deals with the rules for dispensing of these drugs across the pharmacies in the country⁵.

An urgent multisectoral and multidisciplinary action is needed to prevent the emergence of new resistance mechanisms in pathogens, to improve the quality of patient care and to bring down the AMR burden in the country. The objective of this study was to document the challenges and viewpoints of multidisciplinary subject experts participated in the WAAW 2022 program to combat antimicrobial resistance in India.

Material and Methods

It was an observational study conducted during the celebrations of WAAW 2022 organized from 18.11.2022 to 24.11.2022 at Chirayu Medical College and Hospital, Bhopal. Subject experts from the departments of microbiology, pharmacology, community medicine, general medicine and obstetrics and gynecology were invited to deliver talks on the different aspects of AMR. Questions asked by the delegates to the subject experts during the sessions and the responses given by them were documented. The data obtained was arranged in the tabular form as per the objectives of the study.

Results and Discussion

The categorization of delegates is depicted in Figure 1.

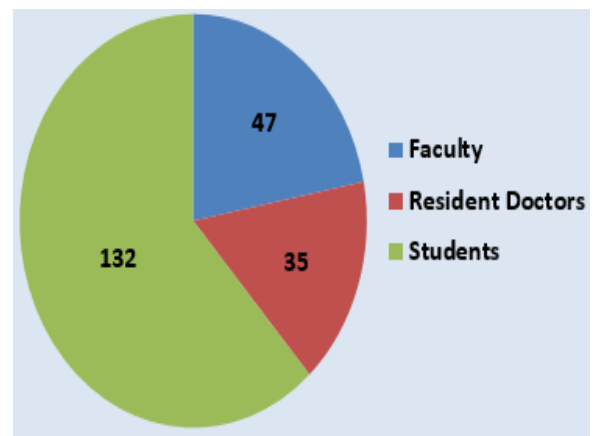


Figure 1: Categorization of delegates

The subject experts' challenges and viewpoints to the questions asked by the delegates are shown in Table 1.

Table 1: Subject expert challenges and viewpoints to the questions asked by the delegates

Specialization of subject experts	Questions asked by the delegates	Viewpoints of subject experts
Microbiology	What is the most important challenge being faced?	Reducing the time to detect sensitivity and resistance patterns of antimicrobials.
	How to reduce AMR?	Restricting the use of broad spectrum antibiotics only to the critically ill patients.
Pharmacology	What is the most important challenge being faced?	Easy availability of counterfeit or spurious antimicrobials.
	How to reduce AMR?	Strict vigilance on dispensing of antimicrobials by government regulatory authorities.
Community Medicine	What is the most important challenge being faced?	Lack of guidance and awareness on antimicrobial resistance among general public and pharmacists.
	How to reduce AMR?	Using antimicrobials judiciously and responsibly in humans and animals.
General Medicine	What is the most important challenge being faced?	Selection of empirical antimicrobials.
	How to reduce AMR?	Timely de-escalation of the dose and duration of antimicrobial therapy.
Obstetrics and Gynecology	What is the most important challenge being faced?	Determining the need of repeat dosing of antimicrobials after surgical procedure.
	How to reduce AMR?	Maintaining proper aseptic measures in the operating room.

According to the WHO, antimicrobial resistance has been considered as one of the top 10 global public health threats facing humanity². Resistance has rapidly emerged to most classes of antibiotics including sulphonamides, penicillins, tetracyclines, macrolides, fluoroquinolones, and early generation cephalosporins as soon as they were released into market by the innovators of these drugs⁶. This shows the rampant and irrational use of antibiotics. Multi-drug resistant strains of *Mycobacterium tuberculosis* are hindering progress in containing the global tuberculosis epidemic⁷. Resistance has also developed to most antivirals, antimalarials, and antifungals⁸.

Subject expert from microbiology highlighted the unmet need of fast, robust, and affordable antimicrobial susceptibility testing (AST) as a challenge to curtail the unnecessary use of antimicrobials and better control the spread of AMR. Study done by Maurer FP et al., noted that early availability of AST is of key

importance for restricting the overuse of reserved antimicrobial agents including glycopeptides and broad-spectrum beta-lactams such as piperacillin-tazobactam or carbapenems⁹.

Subject expert from pharmacology highlighted the easy availability of counterfeit or spurious antimicrobials as a challenge to control the spread of AMR. According to the WHO, about 10% medical products in low- and middle-income countries are substandard or falsified¹⁰. Emergence of AMR as a result of low-quality antimicrobials has been reported by many studies^{11,12}. Using poor-quality antimicrobials by the patients to treat common infections can increase the chances of escalating to broad-spectrum antibiotics by the physicians. This may lead to increased economic burden on the patients and also increases the risk of developing AMR by the broad-spectrum antibiotics towards pathogens causing common infections. Additionally,

regulations to dispense antimicrobials across the pharmacies must be strengthened⁵. Manufacturers of antimicrobial preparations must be instructed to pack the drugs in blue color strips or boxes for unique identification and surveillance thereby echoing the "Go Blue" theme of the WHO¹³. The implementation of the 'track and trace' mechanism by affixing Quick Response (QR) Code from August 1, 2023 onwards by the MOHFW, Government of India is being considered as a step in right direction¹⁴. Regular visits by the drug inspectors to the manufacturers as well as the pharmacies must be done to monitor the adherence of rules described under Drugs and Cosmetics Act. Persons violating the rules must be strictly penalized.

Subject expert from community medicine highlighted about the lack of guidance and awareness on antimicrobial use among general public and pharmacists as a challenge to control the spread of AMR. Many studies conducted across the world to assess the awareness and knowledge of antimicrobial usage and AMR among the general public and pharmacists concluded that one campaign at a point in time does not sufficiently promote the awareness and there is a need for continual awareness campaigns on judicious use of antimicrobials in humans and animals^{15,16}.

Subject expert from general medicine highlighted on the selection of right empirical antimicrobials as a challenge to control the spread of AMR. Although many studies encouraged health care institutions to conduct Antimicrobial Stewardship Programs (ASPs) to optimize antimicrobial therapy^{17,18}, lack of coordination between multidisciplinary physicians, microbiologists, epidemiologists and drug regulators end up in choosing broad-spectrum antimicrobials as empirical drugs for common infections. Timely de-escalation of the dose and duration of antimicrobial therapy helps to maintain clinical effectiveness of broad-spectrum antimicrobials towards susceptible infections while reducing the chances of AMR spread.

Subject expert from obstetrics and gynecology highlighted on determining the need of repeat dosing of antimicrobials after surgical procedure to prevent SSIs as a challenge to control the spread of AMR. Although there is some inconsistency between studies whether a single dose of surgical antibiotic

prophylaxis (SAP) can increase antibiotic resistance, many studies concluded that the relationship between SAP and post-operative antibiotic-resistant infection depends on the type of surgical procedure with the risk being high in immune compromised patients and low in patients undergoing elective surgical procedures¹⁹⁻²¹. Maintaining aseptic standards in the operating rooms as well as during the surgical procedures must be ensured to prevent SSIs and the need of post operative antimicrobials.

Conclusion

Although most of the subject experts' viewpoints in the study were in line with published data and recommendations, some others were not. Strict surveillance from the national and state drug regulatory authorities on antimicrobial dispensing combined with effective implementation of antimicrobial stewardship at every health care institution as recommended by ICMR and WHO will only play a key role in bringing down the AMR burden in the country.

Limitations

This was a single center study, and it is possible that challenges and viewpoints of subject experts could differ in a different hospital settings. Therefore cross sectional hospital based studies should be considered in future to explore new challenges and ideas for preventing AMR in the country.

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